

ing the Prism, I found two or three little Bubbles in the Glass which refracted the Light irregularly. Wherefore I covered that part of the Glass with black Paper, and letting the Light pass through another part of it which was free from such Bubbles, the Spectrum of Colours became free from those irregular Streams of Light, and was now such as I desired. But still I found the Violet so dark and faint, that I could scarce see the Species of the Lines by the Violet, and not at all by the deepest part of it, which was next the end of the Spectrum. I suspected therefore that this faint and dark Colour might be allayed by that scattering Light which was refracted, and reflected irregularly partly by some very small Bubbles in the Glasses and partly by the inequalities of their Polish: which Light, tho' it was but little, yet it being of a White Colour, might suffice to affect the Sense so strongly as to disturb the Phenomena of that weak and dark Colour the Violet, and therefore I tried, as in the 12th, 13th, 14th Experiments, whether the Light of this Colour did not consist of a sensible mixture of heterogeneous Rays, but found it did not. Nor did the Refractions cause any other sensible Colour than Violet to emerge out of this Light, as they would have done out of White Light, and by consequence out of this Violet Light had it been sensibly compounded with White Light. And therefore I concluded, that the reason why I could not see the Species of the Lines distinctly by this Colour, was only the darkness of this Colour and Thinness of its Light, and its distance from the Axis of the Lens; I divided therefore those Parallel Black Lines into equal Parts, by which I might readily know the distances of the Colours in the Spectrum from one another, and noted the distances of the Lens from the Foci of such Colours as cast the Species of the Lines

Lines distinctly, and then considered whether the difference of those distances bear such proportion to 5  $\frac{1}{2}$  Inches, the greatest difference of the distances which the Foci of the deepest Red and Violet ought to have from the Lens, as the distance of the observed Colours from one another in the Spectrum bear to the like distance of the deepest Red and Violet measured in the rectilinear sides of the Spectrum, that is, to the length of those sides or excess of the length of the Spectrum above its breadth. And my Observations were as follows.

When I observed and compared the deepest sensible Red, and the Colour in the confine of Green and Blue, which at that rectilinear sides of the Spectrum was distant from it half the length of those sides, the Focus where the confine of Green and Blue cast the Species of the Lines distinctly on the Paper, was nearer to the Lens than the Focus where the Red cast those Lines distinctly on it by about  $2\frac{1}{2}$  or  $2\frac{3}{4}$  Inches. For sometimes the Measures were a little greater, sometimes a little less, but seldom varied from one another above  $\frac{1}{3}$  of an Inch. For it was very difficult to define the Places of the Foci, without some little Errors. Now if the Colours distant half the length of the Image, (measured at its rectilinear sides) give  $2\frac{1}{2}$  or  $2\frac{3}{4}$  difference of the distances of their Foci from the Lens, then the Colours distant the whole length ought to give 5 or  $5\frac{1}{2}$  Inches difference of those distances.

But here it's to be noted, that I could not see the Red to the full End of the Spectrum, but only to the Center of the Semicircle which bounded that End, or a little farther; and therefore I compared this Red not with that Colour which was exactly in the middle of the Spectrum, or confine of Green and Blue, but with that which verged a little more to the Blue than to the Green: And as I reckoned

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